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Syndiploid nuclei.—In 1904 NĚMEC³⁸ showed that in vegetative tissues the nuclei of binucleate or multinucleate cells may fuse, giving rise to what STRASBURGER has called syndiploid nuclei and cells. In such cells the mitoses show a correspondingly high number of chromosomes, but in some cases the syndiploid condition disappears from the meristematic zone, and NĚMEC believed that a reduction of chromosomes had taken place. In a preliminary note³⁹ he mentions two kinds of reduction figures: one characterized by chromatin tetrads which split so that bivalent chromosomes arrive at the poles; in the other the diploid number appears suddenly without any tetrads, perhaps due to a fusion of chromosomes.

In chloralized roots tips of *Vicia Faba*, syndiploid cell rows are quite numerous in the lateral rootlets, but such rows often end blindly and are replaced by diploid rows. This may happen in different ways. A syndiploid row may be replaced directly by a diploid one, and in this case it is probable that a reduction of chromosomes has taken place; or the syndiploid initials may die and neighboring cells may crowd in; or peripheral syndiploid initials may cease to function. In these three ways it may come to pass that the lateral root may finally consist of only diploid cells.

It must be remembered that, while binucleate and multinucleate cells are rather common in plants, the syndiploid condition has as yet been studied almost exclusively in chloralized material.—CHARLES J. CHAMBERLAIN.

Sporogonium of *Conocephalum*.—Miss GRAHAM,⁴⁰ studying *Conocephalum conicum* (*Fegatella conica*), finds that at Ithaca, N.Y., the gametophores begin to appear in June, that fertilization takes place about the first of July, that the spores are fully formed before the beginning of winter, and that in the following May the gametophore stalk rapidly elongates. This elongation is quickly followed by the elongation of the stalk of the sporogonium. The venter of the archegonium is two-layered at the time of fertilization, and soon becomes a massive calyptra. The first division of the fusion nucleus gives rise to two free nuclei, which may lie parallel with or transversely to the major axis of the archegonium. A cell wall is not laid down until some little time has elapsed after division of the fusion nucleus; when the wall appears, it is transverse. By successive transverse divisions a filament of four or five cells is formed. This observation differs from that of CAVERS, who described an octant stage; the reviewer's observations agree with those of Miss GRAHAM. The first longitudinal walls appear in the outer or capsule end of the filament.

³⁸ NĚMEC, B., Ueber die Einwirkung des Chloralhydrats auf die Kern- und Zellteilung. Jahrb. Wiss. Bot. **39**:645-730. figs. 157. 1904.

³⁹ ———, Ueber das Schicksal der syndiploid Kerne und Zellen. Ber. Deutsch. Bot. Gesell. **29**:113-115. 1910.

⁴⁰ GRAHAM, MARGARET C., Development of the sporogonium and adjacent tissues of the gametophore of *Conocephalum conicum*. Bull. Torr. Bot. Club **36**:615-625. pls. 30-33. 1909.

At the time of separation of the mother cells, the growth of the capsule is checked, while the calyptra continues growth, leaving quite a space between capsule and calyptra. The capsule and seta soon resume growth, fill the cavity, and distend the calyptra. No pseudoperianth, such as is found in *Marchantia*, is present. A sheath, which is a specialized portion of the gametophore, invests the calyptra.—W. J. G. LAND.

Evaporation measurements.—The porous cup atmometer is now recognized by ecologists as one of the best instruments for measuring the evaporating power of the air, which is perhaps the most important climatic factor, or set of factors, in determining the vegetation of any locality. One difficulty in its operation has been that rain falling upon the exposed cup penetrates to some extent into the reservoir and vitiates the readings immediately following. To obviate this difficulty LIVINGSTON⁴¹ has devised a rain-correcting atmometer with a mercury valve preventing any water from entering the reservoir. He also emphasizes⁴² the importance of using nothing but the purest distilled water in the instrument and of standardizing the cups at frequent intervals. Recognizing the necessity of some uniform unit of standardization, in order that the results of the various workers may be comparable, he proposes that the standard cup be one that loses water at the same-rate as 45 sq. cm. of water surface exposed in a Petri dish 1.5 cm. high and kept constantly filled to the depth of 3 mm. Microorganisms in the cups may be prevented by rinsing the cups and reservoirs with weak mercuric chlorid solution. It has also been found desirable to operate two or more cups at each station, as accidents are not likely to occur simultaneously to all, and thus an unbroken record is made more probable.—GEO. D. FULLER.

⁴¹ LIVINGSTON, B. E., A rain-correcting atmometer for ecological purposes. *Plant World* **13**:79-82. 1910.

⁴² ———, Operation of the porous cup atmometer. *Plant World* **13**:111-119. 1910.